

**Southern Plains Inventory and Monitoring Network  
Technical Committee Meeting  
Selection of Vital Signs  
January 26, 2006  
Ambassador Hotel, Amarillo, Texas**

Attending – P. Eubank – Member (LAMR/ALFL), A. Roberts – Member (SAND), T. Benson – Member (PECO), J. Lott – Member (LYJO), F. Revello – Member (FOLS), F. Pannebaker – Member (BEOL), B. Quigley – Member (CAVO), S. Burrough – Member (CHIC), D. Perkins – Member (SOPN Network Coordinator), A. Wimer (LAMR/ALFL), G. Bowser (Gulf Coast CESU), Tomye Folts Zettner (Texas A+M), H. Sosinski (SOPN Data Manager),.

Meeting Commenced at 8:30.

- I. D. Perkins began the meeting with an overview of the results from the prioritization workshop, the goals of the day, and the next steps.
- II. Rank vital signs that were added at the prioritization workshop for management significance
  - A. Each park was asked for their management significance score for plant pathogens, yellow-billed cuckoo, wintering raptors, lepidoptera, native pollinators, and grasshoppers. Since there is currently no technical committee member from FOUN, T. Benson (PECO) provided their score, as was done for the existing vital signs scores for FOUN. **Action Item: WABA did not have their member present, so the Technical Committee decided to divide the management significance score by 10 parks as opposed to 11.**
  - B. Two vital signs, Townsend's big-eared bat and Alberta arctic butterfly were not given scores for ecological significance and feasibility / cost of implementation. **Action Item: The technical committee decided against soliciting additional experts to rank these two vital signs because the committee did not think they would make our selected vital signs list.**
- III. The technical committee then considered the suggestions for merging vital signs that were made by the workgroups at the prioritization workshop.
  - A. Suggestion: "Off-road vehicle use" incorporated into "effects of visitors on natural resources". **Action Item – Adapted.**
  - B. Suggestion: "Extreme weather patterns" incorporated into "weather patterns". **Action Item – Adapted.**
  - C. Suggestion: "Human development" incorporated into "Landscape dynamics". **Action Item – Adapted.**
  - D. Suggestion: "Arkansas river shiner", "Arkansas darter", and "exotic fish" incorporated into "fish community". **Action Item – Adapted.**
  - E. Suggestion: Fecal coliform should be incorporated into water quality and E. coli may be a better measure. **Action Item – Adapted.**
  - F. Suggestion: "Bald eagles" and "ferruginous hawks" should be renamed as a new vital sign "wintering raptors". **Action Item – Adapted.**
  - G. Suggestion: There were three different suggestions for involved combining the following vital signs: "Grassland vegetation", "wetlands vegetation", "riparian vegetation", "fire and fuel dynamics", "woody invasive species" and "exotic plants". **Action Item – "Riparian vegetation" was incorporated into "wetlands vegetation", but "grassland vegetation" was kept separate. Both "grassland vegetation" and "wetland vegetation" would incorporate "woody invasive species" and the area component of "exotic plants". The "exotic plants" vital signs was renamed to "exotic plants – early detection" and kept as separate vital signs. "Fire and fuel dynamics" were also kept as a separate vital sign.**

- H. Suggestion: There were two different suggestions for involved combining the following vital signs: “soil health”, “carbon balance”, “sedimentation rates”, “erosion index”, “cryptobiotic soils”, and “soil budget”. **Action Item – Two new vital signs were created. “Soil Chemistry and Structure” will incorporate “carbon balance”, “soil health” “cryptobiotic soils” and be a measure of physical and biological elements of soil. “Soil movement” will incorporate “sedimentation rates”, “erosion index”, and “soil budget”.**
- I. **Action Item – The committee decided that the new vital sign, “yellow-billed cuckoo” would be incorporated into “bird communities.**
- J. **Action Item – The committee decided to incorporate “groundwater levels” into “water quantity”.**
- K. These suggestions resulted in a new prioritized list of vital signs (Table 1). Combined vital signs retained the highest score of those that were grouped together to create the new vital sign. For a complete list of ranking results by criteria and by park, please see “Prioritization Report”.

#### IV. Selection Process

- A. At the prioritization workshop, the top 25% ranked vital signs were given to the workgroups who were asked if there were any vital signs missing that they felt were essential for our monitoring program. During the technical committee meeting, D. Perkins presented all vital signs that were listed at, or higher than, the lowest rated “essential vital signs”. This resulted in a list of 30 vital signs (Table 1).
- B. The first discussion item was to determine if there were any items that the technical committee felt if any vital signs should be removed or added to this list.
  - 1. The first item proposed for removal was “viewshed”. This resulted in much discussion about whether this was a “natural” or “cultural” value, and whether it should be incorporated into the monitoring program. **Action Item: The item was removed from the list by majority vote.**
  - 2. The next item proposed for removal was “weather patterns”. Many in the group felt that this was an important component to a monitoring program, but that it should not be considered a vital sign. **Action Item: The item remained on the list by majority vote.**
  - 3. There was discussion about combining “native pollinators” with “butterflies” and discussion about expanding “butterflies” to “butterflies and moths”. **Action Item: “Butterflies” was expanded to “Butterflies and moths” but kept as a separate vital sign from “native pollinators” by majority vote.**
  - 4. Further motions for addition, deletion, or combination were tabled to discuss core vital signs.
- C. Core, Secondary, and Tertiary Vital Signs
  - 1. D. Perkins asked for nominations for the core vital signs. These vital signs would be where the network will focus its efforts in the near future and would comprise most of our monitoring program. Selected vital signs that are not on the core list will probably not be monitored unless there are existing programs or additional funding (non vital signs sources) that could make monitoring possible. The goal was to establish a list of 5-10 core vital signs.
  - 2. During the core nomination process vital signs that were nominated as a core vital sign but did not have unanimous consensus, were tabled until the end of the nomination discussion.
  - 3. **Action Item: The following vital signs were nominated and received unanimous votes in favor of being a core vital sign: grassland vegetation communities, bird communities, fire and fuel dynamics, water quantity, early detection of exotic plants, wetland vegetation communities, water quality, soil structure and chemistry, landscape dynamics, and human demographic data (Table 2).**

4. There were 10 vital signs that had unanimous votes for inclusion as a core vital sign. All vital signs that had been previously nominated as a core vital sign, but did not receive unanimous support as a core vital sign became secondary vital signs. Additional nominations were made for the secondary list. Not all of the vital signs included on the secondary list were unanimous; many decisions were made by majority vote. Secondary vital signs will be the next area that the network focuses on if additional funding were available. **Action Item – This process resulted in 8 secondary vital signs (Table 2).**
  5. **Action Item – The remaining 10 vital signs that were not determined to be core or secondary vital signs were deemed tertiary vital signs (Table 2).**
  6. Within core, secondary, and tertiary vital sign categories, all vital signs are deemed equal in value. Future decisions within each category will be made based on cost, logistics, and other factors.
  7. **Action Item – “Grasshoppers” was then removed from the tertiary vital sign list because “butterflies and moths” were thought to be a better invertebrate vital sign for grasslands.**
- V. Request for technical committee members to attend the presentation to Board of Directors
- D. Perkins requested that 3-5 members of the technical committee attend the presentation of the selected vital signs to the Board. This meeting will take place March 29, 2006 in Las Animas, CO (BEOL as host). F. Revello, J. Lott, S. Burrough, P. Eubank, A. Roberts, and F. Pannebaker all expressed interest in attending pending scheduling conflicts.

Table 1. Vital signs prioritization list developed at the prioritization workshop. The shaded vital signs represent the starting point that was used for default “selected vital signs”. An “\*” denotes this vital sign was scored a 0 by the landscape group because they felt it was incorporated by another vital signs. An “^” denotes this vital sign was scored a 0 by the plants and soils group because they felt it was incorporated by another vital signs. An “NR” denotes the item was not actually ranked due to lack of expertise with that particular vital sign.

Potential Vital Sign	Total Score	Management Significance	Ecological Significance	Cost Effectiveness and Feasibility
Grassland vegetation communities	4.78	4.45	5.00	5.00
Bird communities	4.42	3.81	4.75	5.00
Fire and fuel dynamics	4.36	3.90	5.00	4.00
Water quantity	4.34	3.36	5.00	5.00
Early detection of exotic plants	4.32	4.54	4.00	4.50
Wetland vegetation communities	4.28	3.45	5.00	4.50
Ungulates	4.18	3.45	4.50	5.00
Water quality	4.16	2.90	5.00	5.00
Soil Movement	4.02	2.54	5.00	5.00
Weather patterns	4.02	2.54	5.00	5.00
Amphibian Communities	4.02	2.54	5.00	5.00
Soil structure and chemistry	3.98	2.45	5.00	5.00
Landscape dynamics (land cover, condition, connectivity, pattern, land change)	3.91	2.27	5.00	5.00
Small mammal communities	3.90	3.00	4.50	4.50
Viewshed	3.83	3.18	4.00	4.80
Human Demographic data (human density, traffic volume, land ownership patterns, land value)	3.76	1.90	5.00	5.00
Aquatic invertebrates (riverine and palustrine systems)	3.69	1.72	5.00	5.00
Fish communities (riverine systems)	3.69	1.72	5.00	5.00
Wet and dry deposition	3.60	2.00	5.00	4.00
Lepidoptera	3.56	2.40	4.00	5.00
Upland spring communities	3.46	1.90	4.50	4.50
Insect pests	3.39	1.81	4.50	4.33

<b>Potential Vital Sign</b>	<b>Total Score</b>	<b>Management Significance</b>	<b>Ecological Significance</b>	<b>Cost Effectiveness and Feasibility</b>
Plant Pathogens	<b>3.38</b>	1.60	4.70	4.30
Flooding process along river / stream / lake	<b>3.34</b>	2.36	4.00	4.00
Other native pollinators	<b>3.28</b>	2.70	4.00	3.00
Lesser prairie chicken	<b>3.29</b>	0.72	5.00	5.00
Effects of park visitors on natural resources	<b>3.25</b>	3.09	3.38	3.33
Grasshoppers	<b>3.18</b>	2.20	3.50	4.50
Black-tailed prairie dogs	<b>3.18</b>	1.45	4.00	5.00
Fire Ants	<b>3.16</b>	0.90	4.50	5.00
Mineral, oil, and gas extraction	<b>3.11</b>	1.27	4.00	5.00
Visibility and particulate matter	<b>3.09</b>	1.72	4.00	4.00
Large carnivores	<b>2.99</b>	1.72	4.00	3.50
Volcanic cinder cone	<b>2.98</b>	0.45	5.00	4.00
Night sky	<b>2.96</b>	2.45	3.70	2.50
Wintering raptors	<b>2.92</b>	2.80	3.00	3.00
Montane / grassland ecotone	<b>2.91</b>	1.27	3.50	5.00
Texas horned lizard	<b>2.89</b>	1.72	4.00	3.00
Lacustrine community – Plankton richness, abundance, and diversity	<b>2.89</b>	0.72	4.00	5.00
Burrowing Owl	<b>2.86</b>	0.90	3.75	5.00
Feral Hogs	<b>2.84</b>	1.09	4.00	4.00
Effects of Wildlife diseases	<b>2.69</b>	2.00	3.60	2.25
Soundscape	<b>2.67</b>	2.27	3.90	1.00
Southwestern willow flycatcher	<b>2.58</b>	0.45	3.50	5.00
Mountain plover	<b>2.16</b>	0.90	3.00	3.00
Exotic ungulates	<b>2.12</b>	0.81	3.00	3.00
Mississippi kites	<b>2.11</b>	1.27	1.50	5.00
Medium-sized (meso) carnivores	<b>2.10</b>	2.00	1.50	3.50
Migratory stopover area	<b>2.08</b>	2.45	0.50	4.50

Potential Vital Sign	Total Score	Management Significance	Ecological Significance	Cost Effectiveness and Feasibility
Reptile community	<b>2.05</b>	2.63	1.50	2.00
Zebra mussels	<b>2.02</b>	0.54	2.00	5.00
Swift fox	<b>1.82</b>	0.54	1.50	5.00
Non-vascular plants	<b>1.64</b>	1.09	1.00	4.00
Feral Dogs	<b>1.56</b>	0.90	1.00	4.00
Hunting / Game animals	<b>1.52</b>	0.81	1.00	4.00
Contaminants in fishery/food chain	<b>1.49</b>	1.72	0.00	4.00
Fishing	<b>1.44</b>	1.09	0.00	5.00
Endemic and keystone invertebrates (terrestrial systems)	<b>1.42</b>	1.54	1.50	1.00
Nutria	<b>1.32</b>	0.54	1.00	3.50
Raccoons	<b>1.19</b>	0.72	0.75	3.00
Alberta Arctic butterfly	<b>NA</b>	0.45	NR	NR
Townsend's big-eared bat	<b>NA</b>	0.45	NR	NR

Table 2. Selected vital signs pending approval from SOPN Board of Directors. A comprehensive monitoring program would include all of the vital signs listed below. The network will first allocate resources to core vital signs, and these will likely make up the majority of the monitoring program for the near future. Secondary and tertiary vital signs will be considered for monitoring when additional funding is made available, or if there are existing programs that make inclusion of these vital signs cost effective. Vital signs are listed in no particular order.

Core	Secondary	Tertiary
Grassland vegetation communities	Amphibian communities	Ungulates
Bird communities	Fish communities	Soil movement
Fire and fuel dynamics	Aquatic invertebrates	Weather patterns
Water quantity	Wet and dry deposition	Small mammal communities
Early detection – exotic plants	Upland spring communities	Moths and butterflies
Wetland vegetation communities	Native pollinators	Insect pests
Water quality	Effects of park visitors on natural resources	Plant pathogens
Soil structure and chemistry	Black-tailed prairie dogs	Flooding processes
Landscape dynamics		Lesser prairie chicken
Human demographic data		Fire ants